Habitat Assessment- High Gradient

New Jersey Department of Environmental Protection

General Sheet

*** Site ID:** _____ *** Watershed Management Area:** _____

*** Site Name:** _____ *** County:** _____

*** Segment Identification:** Latitude/Longitude: _____

Estimate of Segment Length (aim for 100m): _____

*** Survey Team:** _____

*** Time:** _____ * **Date:** _____

*** Today's Weather:** Clear □Partly Cloudy □Overcast □Light Rain
(Circle one) □ Steady Rain □Heavy Rain □Snow □Heavy Snow Melt

Days since last rain: _____

Air Temperature: _____ ° C

Water Temperature:_____ ° C

Water Conditions: Circle the term that best fits each category

Odor:	Normal Sewage Petroleum Chemical Anaerobic (rotten eggs) Other
Turbidity:	Clear Slightly turbid Turbid
Surface Coating:	None Oily Foam Scum Other
Stream Flow:	Slow Moderate Swift Combination

Stream Measurements: Measure width, depth and calculate velocity

Transect Measurements (10 feet):	
Width	_____, _____, _____, _____, _____ = Average _____ meters
Depth	_____, _____, _____, _____, _____ = Average _____ meters
Velocity	_____, _____, _____, _____, _____ = Average time _____ seconds
	Distance/Average time = _____ meters/second

Stream Characteristics: Circle the term that best fits each category

Canopy:	Open (0-25%) Mostly Open (26 – 50%) Partly Open (51-75%) Mostly Closed/Closed (76-100%)
Woody Debris:	Abundant Moderate Scarce None
Predominant Aquatic Vegetation (choose most abundant type):	Rooted emergent Rooted submergent Rooted floating Free floating No vegetation
Algae Growth:	Abundant Moderate Scarce None
Algae Location (choose most abundant type):	Filamentous Periphyton None
Litter Concentration:	Present Absent If present, how much: _____%
Structures:	None Bridges Culverts Dams Other_____

2015-2016

Assessment Sheet

Land Use Characteristics: Mark off the features present within viewing distance of your stream reach

- ☐ Agricultural Feed Lots
- ☐ Athletic Fields
- ☐ Camping
- ☐ Cemetery
- ☐ Commercial
- ☐ Construction
- ☐ Cropland
- ☐ Dumping
- ☐ Golfing, Resorts
- ☐ Hiking / Paths
- ☐ Horse Trails
- ☐ Inactive Fields
- ☐ Industrial Plants
- ☐ Livestock Use
- ☐ Maintained Lawns
- ☐ Marinas
- ☐ Mines/Quarries
- ☐ Orchards
- ☐ Other: _____
- ☐ Parking Lots
- ☐ Pasture
- ☐ Preserved Open Space
- ☐ Recycling/ Waste Facility
- ☐ Residences
- ☐ Residential Pets / Pet Waste
- ☐ Roads Paved
- ☐ Roads Unpaved
- ☐ Sewage Treatment
- ☐ Stormwater Basin
- ☐ Swimming / Fishing / Canoeing / Boating
- ☐ Waterfowl (approx. #) _____
- ☐ Wetlands

General Observations (60 Characters):

_____

_____

Comments:_____

_____

_____

Site Sketch: Include stream flow, roads, sampling locations, and entry point for the stream assessment

High Gradient Monitoring Sheet

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble and boulder particles are more than 75% surrounded by fine sediment.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Combinations	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is <0.3 m/s, deep is >0.5 m/s)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Habitat Score (1-5)

	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles	Occurrence of riffles relatively frequent; distance between riffles is 5-7 times stream width; variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles is 7 to 15 times stream width.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles is 15 to 25 times stream width.	Generally all flat water or shallow riffles; poor habitat; distance between riffles is >25 times stream width.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing upstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

HABITAT SCORE (1-5)	+	*HABITAT SCORE (6-10)*	=	*TOTAL HABITAT SCORE* Rating:

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	110 – 159
MARGINAL	60 – 109
POOR	< 60

Pipe & Drainage Ditch Sheet

Fill in the blanks and circle the best options for each pipe in your stream reach (add more pages as necessary)

Lat and Long	NJPDES # (if applicable)	Pipe Diameter (in or ft)	Type	Pipe Material	Pipe Location	Pipe Flow	Is stream bank at outfall eroded?	Is stream bed eroded downstream?
			Storm Drain Industrial Drain Residential Discharge Combined Sewer Overflow Other	Concrete Steel Plastic Clay Other	In Water In Bank Near Water	None Trickle Intermittent Steady Heavy	Yes No	Yes No
			Storm Drain Industrial Drain Residential Discharge Combined Sewer Overflow Other	Concrete Steel Plastic Clay Other	In Water In Bank Near Water	None Trickle Intermittent Steady Heavy	Yes No	Yes No
			Storm Drain Industrial Drain Residential Discharge Combined Sewer Overflow Other	Concrete Steel Plastic Clay Other	In Water In Bank Near Water	None Trickle Intermittent Steady Heavy	Yes No	Yes No
			Storm Drain Industrial Drain Residential Discharge Combined Sewer Overflow Other	Concrete Steel Plastic Clay Other	In Water In Bank Near Water	None Trickle Intermittent Steady Heavy	Yes No	Yes No